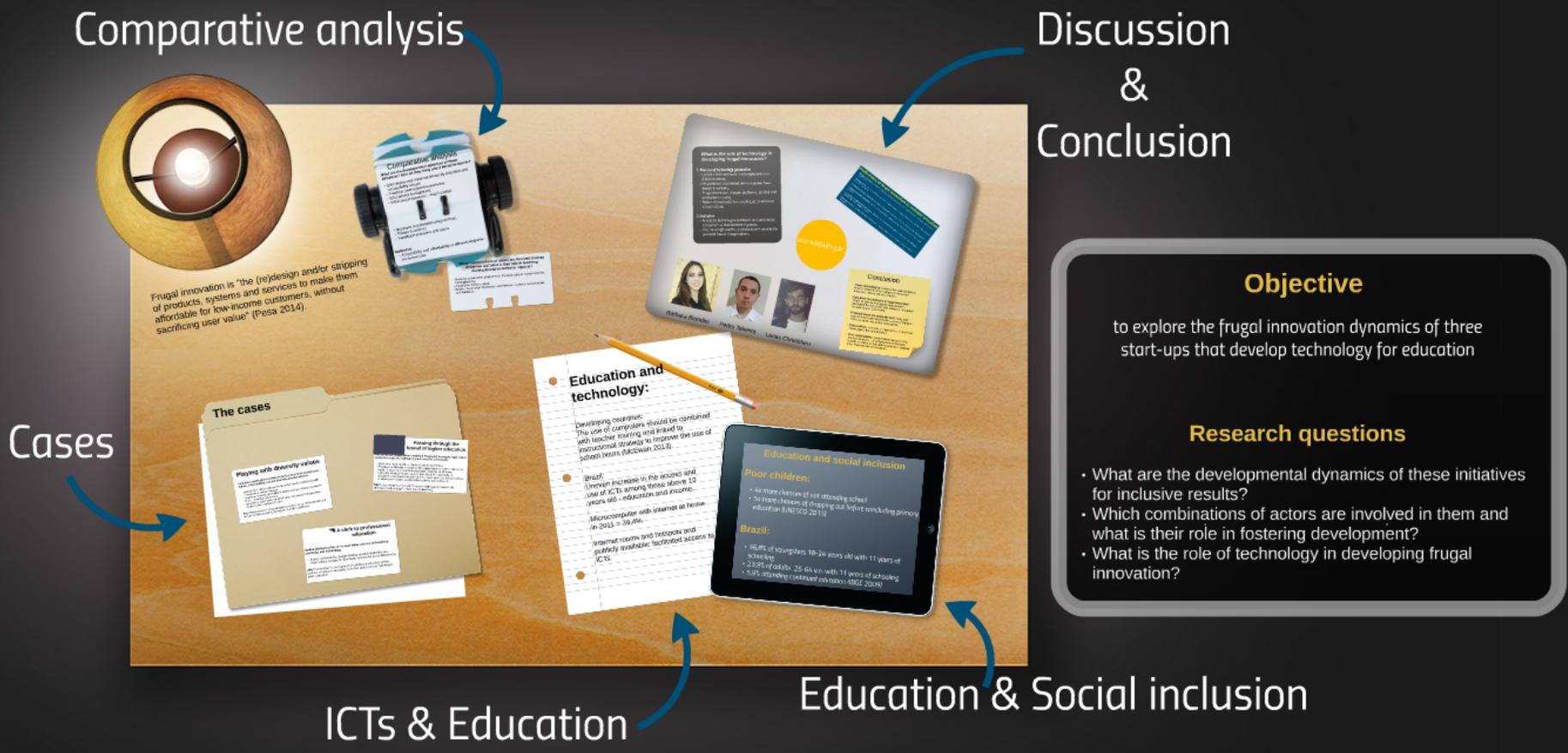


# Frugal innovation in education: Technology for social inclusion and sustainable development

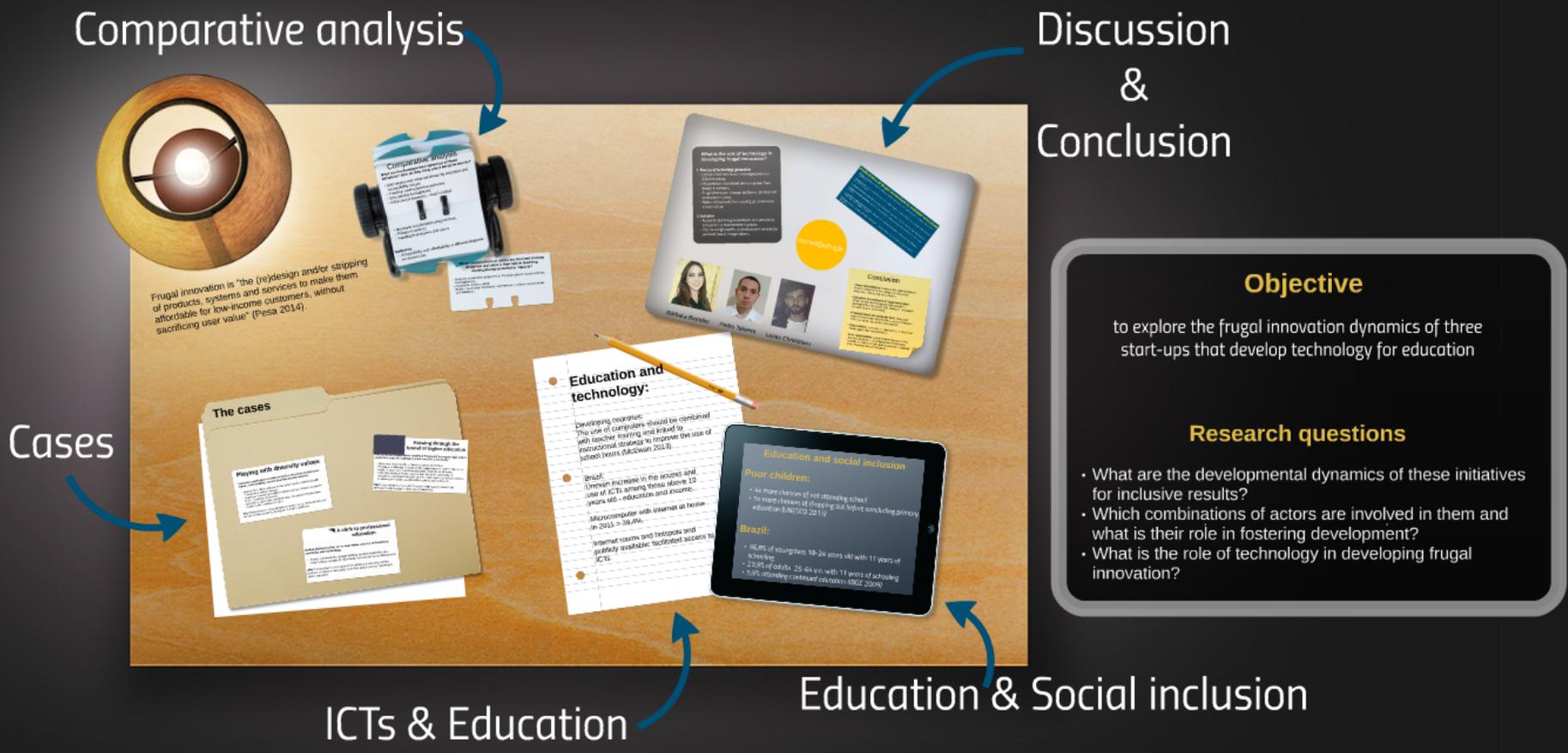
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**When can frugal innovations become inclusive innovations?**  
CFIA/EADI Workshop; November 2015

# Frugal innovation in education: Technology for social inclusion and sustainable development

Ariane A. Corradi, Bárbara K. F. Biondini, Pedro T. Almeida, Lucas H. Christófaro  
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**Objective**

to explore the frugal innovation dynamics of three start-ups that develop technology for education

**Research questions**

- What are the developmental dynamics of these initiatives for inclusive results?
- Which combinations of actors are involved in them and what is their role in fostering development?
- What is the role of technology in developing frugal innovation?

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Frugal innovation is "the (re)design and/or stripping of products, systems and services to make them affordable for low-income customers, without sacrificing user value" (Pesa 2014).

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# Education and technology:

Developing countries:

The use of computers should be combined with teacher training and linked to instructional strategy to improve the use of school hours (McEwan 2013).

**Brazil:**

Uneven increase in the access and use of ICTs among those above 10 years old - education and income.

Microcomputer with internet at home in 2011 = 39,4%.

Internet rooms and hotspots and publicly available: facilitated access to ICTs.

**Education and**

**Poor children:**

- 4x more chances of not attending school
- 5x more chances of dropping out of education (UNESCO 2015)

**Brazil:**

- 36,8% of youngsters 18-24 years old with no schooling
- 23,8% of adults 25-64 y.o. with no schooling
- 5,9% attending continued education

# Education and social inclusion

## Poor children:

- 4x more chances of not attending school
- 5x more chances of dropping out before concluding primary education (UNESCO 2015)

## Brazil:

- 36,8% of youngsters 18-24 years old with 11 years of schooling
- 23,8% of adults 25-64 y.o. with 11 years of schooling
- 5,9% attending continued education (IBGE 2009)

# The cases

## Playing with diversity values

Interactive application of children stories with moral background: nature, sustainability, cultural diversity, popular wisdom.

- Stories from different places in the world - books, workshops with communities, artists' creation;
- Objective: to recreate traditional stories and get children involved in them - creativity and fantasy;
- Currently: 4 associates, no employees, no physical infrastructure, revenues from AppleStore sales.

**Why?** Dissemination of social inclusion values since childhood; low and no cost stories; possibility to migrate to Android platforms.

App  
Prova

## Passing through the funnel of higher education

Free social game application (mobile & Facebook) to prepare high school students to pass the national exam to enroll in a university.

- Questions about specific subjects, clustered by themes;
- Feedback to students on weak points, suggestions on how to improve, e-books to teachers on teaching strategies, study tips to students;
- Currently: physical infrastructure in Belo Horizonte, associates & employees, revenues from sales of tailor-made reports to private schools, in expansion to corporate universities, private companies etc.

**Why?** Opportunity to any student to access high quality material with structured study strategies (students and teachers).



## A click to professional education

Online platform of low or no cost video courses on business, creativity, and technology.

- Topics: sustainability, design thinking, positive leadership etc.
- Short videos, content for download, webchat for group discussions.

**Why?** Innovation in the segment of continuous education (online courses on topics in demand); no-to-low costs courses; 'learning in one's own pace'.

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# Comparative analysis

*What are the developmental dynamics of these initiatives? How do they bring about inclusive results?*

- Entrepreneurial mind-set driven by inclusion and accessibility values;
- Previous professional experience;
- Educational background;
- Initial social networks - social capital;

- Business acceleration programmes;
- Private investors;
- Feedback of buyers and users

## **Inclusion:**

- Accessibility and affordability at different degrees - no-to-low cost.

***Which combinations of actors are involved in these initiatives and what is their role in fostering developmental potential or impacts?***

- Business acceleration programmes: financial support, social networks, training/tutoring;
- Associates: human capital;
- Buyers: co-creation of products and services - continuous exchanges and feedback.

# *What is the role of technology in developing frugal innovation?*

## **1. Process of technology generation**

- Complex and continuous exchanges between different actors;
- Polycentrism: distributed decision power from design to delivery;
- Frugal dimension: cheaper platforms, familiar and accessible to users;
- Reduced fixed costs from scaling up: small or no infrastructure.

## **2. Inclusion**

- Access to technological products and services by consumers of disadvantaged groups;
- The same high quality of products and services for paid and free of charge options.

# Implications of frugal innovation to inclusive education

- **Engage and iterate:** intensive exchanges - reduced R&D costs, increased engagement of buyers, prevention of failure costs;
- **Flexing assets:** lean infrastructure that serves multiple purposes - reduced fixed costs, capacity to attend buyers' demands; low prices;
- **Creating sustainable solutions:** web-based technology - less printed material and commuting, easy upgrading;
- **Shaping consumer behaviour:** diversity and sustainability values; shaping studying behaviour of high school students;
- **Co-creation of values with prosumers:** millennial users of these technologies; entrepreneurs are millennials - overall value of high quality education;
- **Making innovative friends:** networking and feedback - business acceleration programmes; social capital in innovation.

# Conclusion

- **These technologies:** leverage the opportunities of those to whom best schooling or professional education centres are out of reach;
- **Education technologies & frugal innovation:** simple to use, technologically sophisticated, developed through polycentric networks, affordable to lower income consumers;
- **Potential users are above the BoP:** class and regional inequalities prevent the poorest of the poor from accessing educational innovations;
- **Polycentrism:** co-creation; dependence on the local knowledge to the core business;
- **Firm sustainability:** governmental support during the start-up phase - reconfigurations in business models, provision of high quality education, targeted calls. Potential win-win situation?

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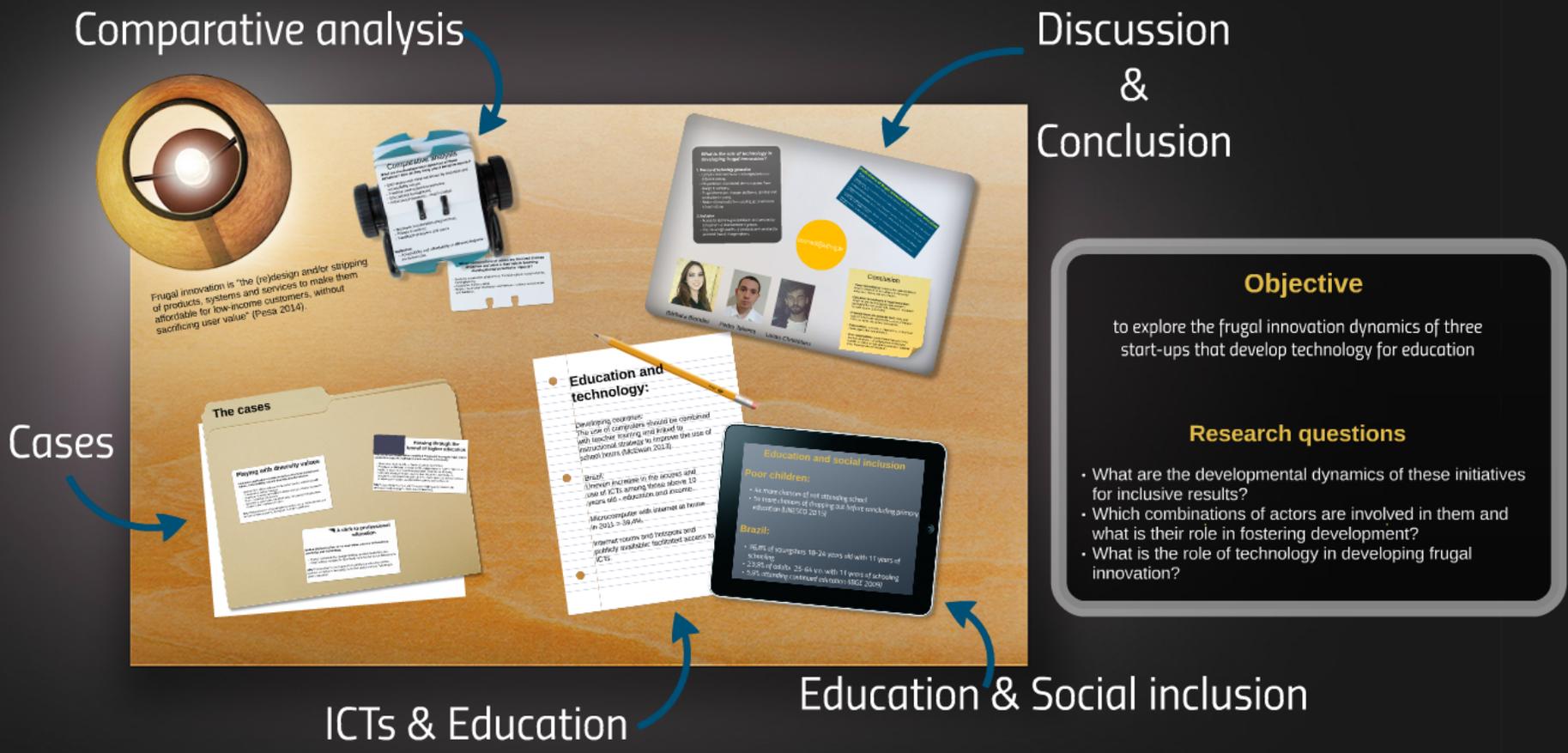
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